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FINAL REPORT  
TRACY-CENTERVILLE MINE RECLAMATION  
CASCADE COUNTY, MONTANA

DECEMBER, 1986

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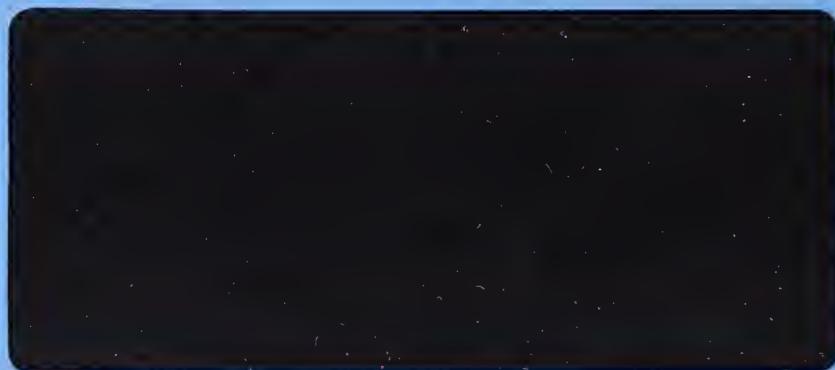
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FINAL REPORT  
TRACY-CENTERVILLE MINE RECLAMATION  
CASCADE COUNTY, MONTANA

DECEMBER, 1986

Prepared for: MR. RICHARD JUNTUNEN, CHIEF  
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CONSULTING ENGINEERS & SURVEYORS  
HELENA — GREAT FALLS — GLENDIVE

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## FINAL REPORT

### TRACY-CENTERVILLE MINE RECLAMATION

#### I. INTRODUCTION

##### A. Project Objectives

The project goals were to close existing coal mine openings, control acid mine drainage; dispose of mine waste piles and mining debris; and reclaim all areas disturbed by past mining operations, acid mine drainage or runoff from spoil piles.

##### B. History

The area in which this project is located was mined extensively until the 1930's. Mining was underground with horizontal entries cut into hillsides. Most sites had rail systems for coal carts and tipples. Trestles were frequently used to connect mine entries to each other and to the railroad.

The coal in the area has a high sulfur content and acid mine drainage is common. The coal seam is capped by a sandstone layer.

##### C. Project Location

This project consisted of reclamation at four sites in Cascade County, Montana. The sites are located approximately 15 miles southeast of Great Falls. Specific locations for each site are as follows:

SPRING COULEE SITE - Adjacent to the east boundary of Tracy, Montana in the SW $\frac{1}{4}$  Section 7, T19N, R5E, P.M.M.

TESINSKY SITE - At the north edge of Brown (Number Seven), Montana,  $\frac{1}{2}$



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mile south of Tracy, Montana in the NW $\frac{1}{4}$  Section 18, T19N R5E, P.M.M.

CHARTIER WESTRIDGE SITE - Along No. 5 Coulee, two miles southwest of Centerville, Montana in the SW $\frac{1}{4}$  Section 35, T19N, R4E, P.M.M.

COTTONWOOD SITE - Along No. 5 Coulee, 1 $\frac{1}{2}$  miles southwest of Centerville, Montana in the NW $\frac{1}{4}$  Section 36, T19N, R4E, P.M.M.

D. Site Description and Problems

1. SPRING COULEE SITE - The site extends approximately 1700 feet along a large coulee above Tracy, Montana. The site included 3.3 acres of waste and spoil piles, several concrete and rock footings for tipples and trestles, 11 adits and a large subsidence hole which appeared to open into the mine workings.

2. TESINSKY SITE - This site is located on a hillside and consisted of three spoil piles, tipple ruins, three adits and areas damaged by runoff-carried spoil. The spoil piles covered approximately 0.6 acre.

3. CHARTIER WESTRIDGE SITE - This site extended approximately 800 feet along a small coulee. The site consisted of one open adit, an adit cut, 2 tipples, several spoil areas, a rail track and miscellaneous mine-related debris. Spoil materials were being carried by runoff and wind onto other areas. The area covered by spoil was approximately 0.5 acre.

4. COTTONWOOD SITE - The site was located primarily on a hillside with some spoil damaged areas on level cropland at the foot of the hill.

The site consisted of two waste piles containing approximately 6500 and 90 C.Y. of spoil. The two piles covered approximately 1.4 acres. Two areas totalling 0.8 acres had been damaged by acid mine drainage. The site also contained: an adit which opened to mine workings that





extended approximately 1400 L.F. underground; 2 closed adits, one of which had acid mine drainage seeping from it; and a drainage channel which had been constructed previously to prevent runoff from carrying spoil onto cropland. The channel sides had washed out in several places.

## II. DESCRIPTION OF RECLAMATION PROJECT

### A. Project Planning

The project included four sites which were selected because it appeared that reclamation of some portion of each site could be most efficiently performed with pneumatic stowing equipment. The sites were combined into one project to minimize the cost per site for mobilizing the specialized stowing equipment.

L. C. Hanson Company began preliminary survey and design work in the summer of 1984. Five sites were included in the project originally. Preliminary plans, Special Provisions and bid sheets for the Centerville School Site were submitted to the Department of State Lands on January 25, 1985. The Centerville School was deleted from the project on February 4, 1985, as directed by the Department of State Lands.

Planning considerations for each of the sites follows:

1. SPRING COULEE SITE - The primary objectives at this site were to close open adits, clean up mine waste, and backfill the one large subsidence hole.

The subsidence hole (labeled as Adit No. 7) was located at the upper end of the project in the coulee bottom and appeared to be diverting runoff water from the coulee channel into the mine workings. Backfilling the subsidence and rebuilding a channel across it would prevent water from entering the mine and possibly reduce acid mine



drainage in the area. The coulee sides are very steep and the coulee was heavily vegetated. Pneumatically backfilling the subsidence with mine wastes and then pneumatically placing soil cement seal to rebuild the channel appeared to be the best method for backfilling the subsidence with the least amount of disturbance to existing vegetation.

The town of Tracy is located in the natural drainage of the coulee. Past landowners had constructed a channel to divert runoff water around Tracy. Runoff calculations projected the volume of water which could come down the coulee to be greater than could be handled by the existing diversion channel or the existing small bridge in the access to the Terry Adkins residence. A new channel and culverts were designed to handle the projected flow.

Two adits on site were closed and required no work. Five adits were partially open and needed to be sealed to prevent access. One adit (Adit No. 12) was open and intermittently had acid water seeping from it or standing water in it. Two adits were closed and had deteriorating wood culverts draining acid water from them. Good water was seeping from one adit. The landowner had had partial success collecting this good water and piping it to a stock tank.

Those adits with no water were to be sealed by pneumatically backfilling the first 30 feet with spoil material and then pneumatically placing a soil cement cap over the spoil material.

The two adits with intermittent seepage of acid water (one of which had a wood culvert) were planned to be excavated open to assure free drainage and then sealed with rip rap to allow continued channelized drainage.

The Bureau of Mines had measured acid mine drainage flows which varied from 20 to 225 gpm coming from Adit No. 4. This adit was partially open and had a wood culvert draining it. Plans called for this adit to be excavated open, for the wood culvert to be intercepted in the mine



and for a PVC pipe to be installed to replace the culvert. The adit would be sealed with rip rap to permit drainage in the event of a pipe blockage.

Plans for the adit with good water called for the construction of a collection pit and piping to a stocktank. Allowances would be made for future connections to permit piping of the water to dilute acid water for treatment.

The spoil and waste materials on site would be excavated and disposed of on site in an existing railroad cut. Soil from channel construction would be placed over the spoil materials. Topsoil from off site would be placed over the cover soil.

All disturbed areas would be seeded, fertilized and mulched. Because livestock access to the stocktank had to be maintained, fenced graveled alleys were designed for use until vegetation was re-established.

Limestone chips would be used to line portions of the new channel as a passive treatment for the acid mine drainage.

2. TESINSKY SITE - The primary objectives at this site were to close a mine opening, clean up mine waste piles, demolish a tipple structure and reclaim areas damaged by runoff-carried spoil materials.

Two of the three adits on site were closed and required no work. The third adit would be pneumatically backfilled with waste materials for the first 30 feet. The adit cut would be backfilled with spoil using earth moving equipment.

All spoil and one foot of interface material were to be excavated and removed. Spoil materials not used as adit backfill would be hauled to an off-site disposal area.

All disturbed areas would be topsoiled with imported topsoil then





seeded, fertilized and mulched.

3. CHARTIER WESTRIDGE SITE - The main objectives at this site were to close the adit, re-establish the coulee channel which had been blocked by mining activities, demolish structures and clean up coal wastes and debris.

Spoil material was planned to be pneumatically placed to backfill the first 30 feet of the mine opening. Earth moving equipment would then be used to re-establish the channel, backfill adit cuts and regrade disturbed areas.

Debris and demolished structures would be disposed of off-site.

All disturbed areas would be topsoiled with imported topsoil, fertilized, seeded and mulched.

4. COTTONWOOD SITE - The primary objectives at this site were to close the existing adit, dispose of waste piles, reconstruct the drainage channel, control acid mine drainage and reclaim all disturbed areas.

The plan was to pneumatically backfill with spoil materials as much of the mine as possible. This work would dispose of the waste materials in an ecologically sound manner and also seal and stabilize the mine workings. Pneumatically backfilling the mine would require entry by workmen, therefore, the mine portal and workings would have to be rehabilitated to provide safe working conditions. A minimum amount of rehabilitation work to produce safe conditions as determined by a certified mine foreman is all that would be required due to the temporary nature of the work to be performed.

Waste materials which could not be used as backfill would be graded in place to produce a ridge that would blend with the surrounding hillside. A ditch would be constructed along this ridge to channel



runoff. Soil excavated from the ditch would be placed as cover over the waste ridge materials. The waste materials would be treated with lime prior to placement of cover soil.

The source for acid water causing the damaged area appeared to be a closed adit. This adit would be excavated open as necessary to determine and intercept the water source. Seepage collection trenches would also be constructed just below the adit. Contaminated materials would be stripped from the area and placed to form a ridge. A ditch would be constructed along this ridge to carry water from the seepage collector. Soil excavated from the ditch would be placed as cover over the contaminated ridge materials. The ridge would be treated with lime prior to placement of the cover soil.

The existing drainage channel would be reconstructed and lined with rock.

All disturbed areas would be topsoiled with imported topsoil, seeded, fertilized and mulched. Waste contaminated soil would be stripped from those areas in cropland and used as cover soil over waste areas. Topsoil would not be placed and no seeding would occur on cropland.

A 48" culvert was planned to be installed in a small creek to permit access to the lower portion of the site.

#### B. Chronological History -

1. Invitation for Bids dated May 16, 1985. Project advertised three (3) times at consecutive one-week intervals.
2. Pre-bid conferences held on site on May 24, 1985 and June 4, 1985.
3. Bids opened on June 12, 1985.
4. Shumaker Trucking and Excavating Contractors, Inc. demonstrated their pneumatic stowing equipment on July 1, 1985.



5. Contract awarded on June 28, 1985 to:

SHUMAKER TRUCKING AND EXCAVATING  
CONTRACTORS, INC.

PO Box 1442

Great Falls, MT 59403

Receipt of Notice of Award acknowledged on July 9, 1985.

6. Agreement dated July 19, 1985.
7. Preconstruction meeting held on-site on August 1, 1985.
8. Contract time started August 12, 1985.
9. Contractor began work on August 19, 1985.
10. Winter Shutdown order effective November 7, 1985. Perimeter fence complete at all sites; culverts and stock tank installed, stower set up and stowing started at Spring Coulee Site; and portal and mine rehabilitation completed at Cottonwood Site.
11. Resume Work Order issued effective February 4, 1986.
12. Work completed on May 30, 1986.
13. Final inspection by Owner, Landowners, Inspector and Contractor completed on June 9, 1986.

C. Equipment

1. Radmark 105S Pneumatic Stower
2. Cat D6 Dozer
3. Conveyor and Screens
4. Case 580C Backhoe
5. 3 Tandem Dump Trucks
6. Smith 100 Compressor and Pogo
7. Drott Front-end Loader
8. Waldon Front-end Loader
9. Cat 977K Tracked Loader
10. 2 Cat 966C Front-end Loaders
11. Wagoner Scraper
12. Cat D-8 Dozer
13. 3 Concrete Redimix Trucks
14. Cat 12F Motor Grader





15. Cat 14 Motor Grader
16. Water Truck
17. Gene Johnson's 4-wheel drive Tractor and Spring Tooth Harrow.
18. McDaniels and Sons Hydromulcher
19. Vibratory Roller
20. Miscellaneous pick-up trucks.

D. Construction Operations

1. SPRING COULEE SITE

- a. Set up screening plant and screened spoil material for stowing.
- b. Constructed perimeter fencing.
- c. Excavated Adit No. 3 (good water source) and installed collector and stock tank.
- d. Adjusted water service to Terry Adkin's residence to permit culvert installation - used Case backhoe and plate tamper.
- e. Installed 36" culverts under Adkin's driveway - used Drott front-end loader, Case backhoe, compressor with pogo and a tandem dump truck.
- f. Drilled and blasted rock in opening to Adit #12 to permit drainage.
- g. Began stowing spoil into adits using Radmark Pneumatic Stower. Stower loaded using Waldon loader. Recontoured area west of water tank road with D6 dozer.
- h. Excavated Adit #4 open with D6 dozer and Case backhoe. Installed PVC pipe and bedding and then constructed riprap seal.
- i. Cleaned up spoil areas using D6 dozer and 977 K loader and hauled spoil materials to disposal area in dump trucks.
- j. Completed stowing in all adits except #7. 977 K loader constructed a haul road to Adit #7 using topsoil imported in dump trucks.
- k. Constructed riprap adit seals, used 977 K loader with slotted bucket to produce riprap material on site.



- l. Constructed Adit No. 7 seal; placed concrete plug and concrete surface with redi-mix trucks; transported and placed spoil backfill with the 977 K loader. Large rocks were blasted to clear the channel.
- m. Excavated channels with D6 dozer, 966 loader, Waldon loader and Case backhoe.
- n. Constructed soil cement seals using red-mix concrete and a concrete pump.
- o. Placed topsoil around Adit #7 and reclaimed haul road to Adit #7 with backhoe.
- p. Placed limestone channel lining with 966 C loader and 2 laborers.
- q. 966 C loader and dump trucks hauled materials excavated from channels and placed as cover over disposal area.
- r. Excavated Adit #5 with backhoe and constructed riprap seal.
- s. Blended lime with imported topsoil using dozer, transported lime mixture with 966 loader, then spread and blended with D6 dozer.
- t. Spread lime on steep channel slopes with Waldon loader, wheel barrow, laborers, and rakes.
- u. Imported topsoil with dump trucks and spread with D6 dozer, Waldon loader and Drott loader.
- v. Graded water tank road, spread gravel on water tank road and cattle paths using motor patrol.
- w. Fertilized flat areas with Cenex spreader, blended with Gene Johnson's tractor and spring-tooth harrow.
- x. Applied seed, fertilizer, half of the mulch, and half of the tackifier to slopes with hydro-mulcher. Tracked with D6 dozer, then applied remainder of mulch and tackifier with hydro-mulcher. Seeded, tracked and mulched flat areas using hydro-mulcher and D6 dozer.
- y. Completed miscellaneous work items. Replaced damaged county road pavement using motor patrol, Waldon loader and vibratory roller.



## 2. TESINSKY SITE

- a. Constructed perimeter fencing.
- b. Constructed access road to Spoil No. 2 with D6 dozer.
- c. D6 dozer pushed Spoil No. 2 material to 966C loader which loaded dump trucks for haul to Clay Pits disposal area (some select spoil hauled to Cottonwood Site). Dozer also demolished tipple which was then hauled to separate area in Clay Pits to be burned.
- d. Set up stower and pneumatically backfilled Adit #2 with spoil.
- e. Backfilled the Adit #2 cut with spoil material, used D6 dozer.
- f. Built access road to Spoils #1 and #3 with 966 loader.
- g. Excavated, loaded and hauled spoils to Clay Pits Disposal area from Spoils #1 and #3 using D6 dozer, 966 loader and dump trucks.
- h. Spread and blended lime into soil using 966 loader.
- i. Topsoiled disturbed areas using 966 Loader, 2 dump trucks and D6 dozer.
- j. Used Waldon loader to clean spoil from yard of residence and to place topsoil.
- k. Filled in ditch behind Tesinsky residence using D6 dozer.
- l. Applied seed, fertilizer, half of the mulch and half of the tackifier with hydro-mulcher. Tracked with D6 dozer. Applied remainder of mulch and tackifier with hydro-mulcher.
- m. Completed miscellaneous work items and cleanup.

## 3. CHARTIER WESTRIDGE SITE

- a. Constructed perimeter fence.
- b. Set up stower and pneumatically closed the adit with screened spoil material hauled from Cottonwood Site in dump trucks.
- c. Stripped soil from fill areas and excavated channel with 977K





- loader.
- d. Loaded debris into dump truck with backhoe and hauled to Clay Pits to burn.
  - e. Pushed over tipplles with D6 dozer. Loaded wood into dump trucks with 966 loader and hauled to Clay Pits to burn.
  - f. Spread and blended lime with backhoe.
  - g. Spread imported topsoil and placed bank protection with 977K loader.
  - h. Applied seed, fertilizer, half of the required mulch, and half of the required tackifier with the hydro-mulcher. Tracked with D6 dozer. Applied remaining mulch and tackifier with hydro-mulcher.
  - i. Completed miscellaneous work and cleanup.

#### 4. COTTONWOOD SITE

- a. Rehabilitated the portal and mine under supervision of a certified mine foreman.
- b. Constructed perimeter fence.
- c. Mapped mine workings.
- d. Installed culvert in creek for access road using backhoe, dump truck and plate tamper.
- e. Set up screening plant, constructed access roads and set up stower.
- f. Screened spoil materials using D8 dozer to feed trap.
- g. Pneumatically backfilled mine using the Drott loader to measure materials and the Waldon loader to load the stower.
- h. Shaped remaining spoil into ridge and backfilled adit cut using D6 and D8 dozers, and 977 K and 966 loaders.
- i. Excavated ditches with D6 dozer, constructed seepage collector with backhoe.
- j. Wagoner scraper excavated "D" ditch.
- k. Scraper stripped contaminated soil from cropland and placed as cover over spoil ridge.
- l. Spread and blended lime with D6 dozer.



- m. Hauled and placed topsoil with scraper. Also hauled topsoil with dump trucks and placed with D6 dozer.
- n. Motor patrol shaped ditches.
- o. Hauled bank protection with dump trucks and placed with 966 loader.
- p. Cenex fertilizer truck spread fertilizer and Gene Johnson blended in with spring-tooth harrow.
- q. Applied seed with hydro-mulcher, tracked with D6 dozer and then applied mulch and tackifier with hydro-mulcher.
- r. Completed miscellaneous work items and cleanup.

### III. COST SUMMARY

#### A. Final Payment Request and Reconciliation Change Order

A copy of the Final Payment Request and Reconciliation Change Order are contained in Appendix A. These documents summarize the final quantities and costs for each work item.

#### B. Change Orders

The following Change Orders were executed during the course of the project:

1. Change Order No. 1 - The Contractor requested permission to build a haul road to Adit No. 7 at Spring Coulee site because his stower could not transport wet, clayey backfill materials. This Change Order allowed construction of the haul road, set requirements for reclamation of the road, and established measurement methods for Surface Pneumatic Stowing and Soil Cement for Adit No. 7. This Change Order also adjusted the Contract time to give credit for inclement weather days to date.
2. Change Order No. 2 - The Contractor requested an alternate method of measurement for Underground Pneumatic Stowing because he could not



obtain a belt scale with the accuracy specified. This Change Order specified measurement by bucket load count and reduced the cost of mobilization for the Cottonwood Site to allow for inaccuracies in the alternate measurement method.

3. Change Order No. 3 - This Change Order permitted the hauling of materials from the Tesinsky Site to stow in the mine at the Cottonwood Site in lieu of stowing the sandy materials from the Cottonwood Site.

4. Change Order No. 4 - The Owner required lime placement on the new creek channel constructed at Spring Coulee due to unanticipated highly-acidic soil encountered.

5. Change Order No. 5 - A landowner requested that an additional area disturbed by past mining operations be topsoiled at the Spring Coulee Site.

6. Change Order No. 6 - A landowner at the Tesinsky Site requested the removal of a diversion ditch constructed in the past to prevent runoff from carrying waste materials onto his property.

7. Change Order No. 7 - Reconciliation of Final Quantities and Contract time.

C. Costs Per Site/Unit

1. Total Cost -	\$ 295,185.12
2. Cost per Site -	
A. Spring Coulee Site	\$ 119,272.70
B. Tesinsky Site	21,852.00
C. Chartier-Westridge Site	22,580.00
D. Cottonwood Site	131,480.42





3. Cost per Acre (disturbed area)
  - A. Spring Coulee Site (4.6 ac) \$ 25,928.85/Acre
  - B. Tesinsky Site (1.0 ac) 21,852.00/Acre
  - C. Chartier Westridge Site (0.5 ac) 45,160.00/Acre
  - D. Cottonwood Site (3.0 ac) 43,826.81/Acre
  
4. Cost per Acre per Work Item
  - A. Spring Coulee Site
    1. Excavation and disposal (3.3 ac) \$ 3,673.48/Acre
    2. Lime Placement (4.8 ac) 1,356.25/Acre
    3. Topsoil (4.6 ac) 3,487.50/Acre
    4. Seed and fertililzer (4.6 ac) 100.00/Acre
    5. Mulch (4.6 ac) 900.00/Acre
  - B. Tesinsky Site
    1. Excavation and Disposal (0.6 ac) \$ 9,430.00/Acre
    2. Lime Placement (0.6 ac) 1,666.67/Acre
    3. Topsoiling (0.6 ac) 4,293.33/Acre
    4. Seed and fertilizer (1.0 ac) 300.00/Acre
    5. Mulch (1.0 ac) 900.00/Acre
  - C. Chartier Westridge Site
    1. Excavation and Dispsoal (0.5 ac) \$ 4,200.00/Acre
    2. Lime Placement (0.5 ac) 2,000.00/Acre
    3. Topsoil (0.5 ac) 5,604.00/Acre
    4. Seed and fertilizr (0.5 ac) 600.00/Acre
    5. Mulch (0.5 ac) 1,800.00/Acre
  - D. Cottonwood Site
    1. Excavation and Disposal (2.2 ac) \$ 5,818.18/Acre
    2. Lime Placement (2.8 ac) 1,071.43/Acre
    3. Topsoil (2.8 ac) 4,500.00/Acre
    4. Seed and fertilizer (3.0 ac) 395.00/Acre
    5. Mulch (3.0 ac) 900.00/Acre
  
5. Cost per Unit - LUMP SUM Items
  - A. Spring Coulee Site
    1. Excavation and Disposal (3730 C.Y. ) \$ 3.25/C.Y.



2. Channel Excavation (2340 C.Y.)		3.00/C.Y.
3. Topsoil (3565 C.Y.)		4.50/C.Y.
4. Mulch (9200 Lbs)		0.45/LB
B. Tesinsky Site		
1. Excavation and Disposal (2130 C.Y.)	\$	2.66/C.Y.
2. Topsoil (460 C.Y.)		5.60/C.Y.
3. Mulch (2000 lbs)		0.90/LB
C. Chartier-Westridge Site		
1. Excavation and Disposal (546 C.Y.)	\$	3.85/C.Y.
2. Topsoil (589 C.Y.)		4.76/C.Y.
3. Mulch (1000 Lbs)		0.90/LB
D. Cottonwood Site		
1. Excavation and Disposal (5685 C.Y.)	\$	2.25 C.Y.
2. Topsoil (2250 C.Y.)		5.60 C.Y.
3. Mulch (6000 Lbs)		0.45/LB

#### IV. SUMMARY

##### A. Completed Reclamation

The TRACY-CENTERVILLE MINE Reclamation Project was completed generally as planned and the project goals were accomplished.

The mine at the Cottonwood Site was not backfilled completely. The portion not backfilled, that was planned to be backfilled, consisted mainly of a haulway cut through sandstone and appeared to be stable.

The Contractor was originally allowed 200 days to complete the work. Given credit for inclement weather days and extra work under Change Orders, the Contractor completed the work with 33 days of Contract time remaining.

The completed work at all sites was very good and the landowners involved are pleased with the reclamation.



The majority of the land reclaimed will return to use as grazing land when vegetation has been re-established. A small area at the Cottonwood Site will continue to be used for grain crops.

## B. Comments

The Contractor was easy to work with and strove for quality reclamation. The Contractor's planning and scheduling could have been improved. The Contractor's operation, however, was hindered by wet weather conditions.

Growth of vegetation at all sites should be monitored, particularly on the slopes at the Cottonwood and Chartier Westridge Sites.

A small seep has appeared beside the "B" ditch at the Cottonwood Site. The seep is presently draining into the "B" ditch, however, it should be monitored as it could cut its own channel or spread out over a larger area.

The inlet box in the creek channel at the Spring Coulee Site should be checked on a regular basis as the grate on it plugs easily.

The Contractor's responsibility for damage to public roads should be stressed very strongly on future projects involving hauling materials on public roads. Also, close communications should be maintained by the Engineer and the Contractor with the public officials responsible for the roads.

## V. SLIDES

The Slide Logs and Slides are contained in Appendix B.



## APPENDIX A



APPENDIX A

FROM May 18, 1986 TO May 30, 1986

PROJECT NAME TRACY-CENTERVILLE MINE RECLAMATION

LOCATION CASCADE COUNTY, MONTANA PROJ. NO. IFB 4957-G

NAME OF CONTRACTOR Shumaker Trucking ADDRESS PO Box 1442, Great Falls, MT 59403

CHANGE ORDERS			CONTRACT STATUS			
No.	Description	Amount	Total Amount	Completed Amount	Uncompleted Amount	Per Cent Complete
4	SPRING COULEE LIME PLACEMENT	1,235.50	\$324,112.70	324,112.70		
5	SPRING COULEE CARNAHAN TOPSOIL	406.00				
6	TESINSKY SITE DITCH REMOVAL	475.00				
7	FINAL QUANTITY RECONCILIATION	-31,451.58	Equip. Use 133.00	Equip. Use 133.00		
Total Change Orders			- 29,060.58	-29,060.58	-0-	
CONTRACT TO DATE INCLUDING CHANGE ORDERS			\$295,185.12	295,185.12		

TOTAL RETAINAGE	\$	COMPLETED TO DATE	\$ 295,185.12
SECURITIES ON DEPOSIT	\$	PLUS MATERIALS ON SITE	\$ -0-
ADJUSTED RETAINAGE	\$	TOTAL COMPLETED TO DATE	\$ 295,185.12
*For use only when securities are on deposit in lieu of 10% retainage.		*10% OR ADJUSTED RETAINAGE	\$ -0-
		TOTAL AMOUNT EARNED TO DATE	\$ 295,185.12
		LESS PREVIOUS PAYMENTS	\$ 237,636.77
		AMOUNT DUE THIS PAYMENT	\$ 57,548.35
		LESS 1% TAX	\$ 575.48
		TOTAL DUE CONTRACT	\$ 56,972.87

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Shumaker Trucking  
(Contractor)

By \_\_\_\_\_

Date \_\_\_\_\_

RECOMMENDED BY:

L. C. Hanson Company  
(Engineer)

By Allen W. Hanson

Date 6/13/86

Approved By:

Montana Dept. of State Lands  
Owner

[Signature]

6/17/86

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



SCHEDULE I - SPRING COULEE ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
1.	MOBILIZATION	LUMP SUM	17,838.00	LUMP SUM	17,838.00	100
2.	EXCAVATION & DISPOSAL	LUMP SUM	12,122.50	LUMP SUM	12,122.50	100
3.	SURFACE PNEUMATIC STOWING	1158 TON	22.00	1179.8 TON	25,955.60	100
4.	SOIL CEMENT	171 TON	50.00	108.7 TON	5,435.00	100
5.	RIPRAP ADIT SEAL	382 C.Y.	12.00	201 C.Y.	2,412.00	100
6.	INSTALL 36" RCP CULVERTS	LUMP SUM	2,408.00	LUMP SUM	2,408.00	100
7.	TYPE 4 BANK PROTECTION	52 C.Y.	20.00	76 C.Y.	1,520.00	100
8.	LIMESTONE CHANNEL LINING	102 TON	34.00	84 TON	2,856.00	100
9.	GRAVEL SURFACING	111 C.Y.	9.00	127 C.Y.	1,143.00	100
10.	SPRING COLLECTOR & STOCK TANK	LUMP SUM	4,000.00	LUMP SUM	4,000.00	100
11.	CHANNEL EXCAVATION	LUMP SUM	7,020.00	LUMP SUM	7,020.00	100
12.	PNEUMATIC TOPSOIL	145 TON	26.00	115 TON	3,016.00	100
13.	CONSTRUCT FARM FENCE	215 ROD	12.00	224.8 ROD	2,597.60	100
14.	FENCE - SINGLE PANELS	18 EACH	75.00	17 EACH	1,275.00	100
15.	FENCE - DOUBLE PANELS	4 EACH	100.00	8 EACH	800.00	100
16.	FENCE - TERMINAL POST	11 EACH	40.00	11 EACH	440.00	100
17.	FARM GATES	108 L.F.	5.00	107 L.F.	535.00	100
18.	REPAIR EXISTING FENCE	4 ROD	10.00	4 ROD	40.00	100
19.	DEBRIS CLEANUP	LUMP SUM	500.00	LUMP SUM	500.00	100
20.	LIME PLACEMENT	LUMP SUM	4,000.00	LUMP SUM	4,000.00	100
21.	TOPSOIL	LUMP SUM	16,042.50	LUMP SUM	16,042.50	100
22.	SEED AND FERTILIZE	LUMP SUM	460.00	LUMP SUM	460.00	100
23.	MULCH	LUMP SUM	4,140.00	LUMP SUM	4,140.00	100
24.	REMOVE AND RESET FENCE	16 ROD	10.00	15.5 ROD	165.00	100

Date		Description		Amount	
1901	Jan 1	Balance		100.00	
1901	Jan 15	Received from A. B.		50.00	
1901	Feb 1	Received from C. D.		25.00	
1901	Mar 1	Received from E. F.		75.00	
1901	Apr 1	Received from G. H.		100.00	
1901	May 1	Received from I. J.		150.00	
1901	Jun 1	Received from K. L.		200.00	
1901	Jul 1	Received from M. N.		250.00	
1901	Aug 1	Received from O. P.		300.00	
1901	Sep 1	Received from Q. R.		350.00	
1901	Oct 1	Received from S. T.		400.00	
1901	Nov 1	Received from U. V.		450.00	
1901	Dec 1	Received from W. X.		500.00	
1901	Dec 31	Total		2000.00	
1902	Jan 1	Balance		100.00	
1902	Jan 15	Received from A. B.		50.00	
1902	Feb 1	Received from C. D.		25.00	
1902	Mar 1	Received from E. F.		75.00	
1902	Apr 1	Received from G. H.		100.00	
1902	May 1	Received from I. J.		150.00	
1902	Jun 1	Received from K. L.		200.00	
1902	Jul 1	Received from M. N.		250.00	
1902	Aug 1	Received from O. P.		300.00	
1902	Sep 1	Received from Q. R.		350.00	
1902	Oct 1	Received from S. T.		400.00	
1902	Nov 1	Received from U. V.		450.00	
1902	Dec 1	Received from W. X.		500.00	
1902	Dec 31	Total		2000.00	



## SCHEDULE I - SPRING COULEE ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
25.	6" PERFORATED PVC PIPE	70 L.F.	10.00	81 L.F.	810.00	100
	Sub-Total Schedule I				\$117,631.20	





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SCHEDULE III

CHARTIER WESTRIDGE ITEMIZATION OF QUANTITIES AND COSTS						
ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
1.	MOBILIZATION	LUMP SUM	6,870.00	LUMP SUM	6,870.00	100
2.	EXCAVATION & DISPOSAL	LUMP SUM	2,100.00	LUMP SUM	2,100.00	100
3.	SURFACE PNEUMATIC STOW- ING	42 TON	30.00	44.7 TON	1,341.00	100
4.	CONSTRUCT ACCESS ROADS	LUMP SUM	900.00	LUMP SUM	900.00	100
5.	TYPE 4 BANK PROTECTION	19 C.Y.	25.00	19 C.Y.	475.00	100
6.	LIME PLACEMENT	LUMP SUM	1,000.00	LUMP SUM	1,000.00	100
7.	CONSTRUCT FARM FENCE	111 ROD	10.00	108.9 ROD	1,089.00	100
8.	FENCE - SINGLE PANELS	2 EACH	75.00	2 EACH	150.00	100
9.	FENCE - DOUBLE PANELS	5 EACH	90.00	6 EACH	540.00	100
10.	FARM GATES	16 L.F.	5.00	16 L.F.	80.00	100
11.	DEBRIS CLEANUP	LUMP SUM	3,000.00	LUMP SUM	3,000.00	100
12.	TOPSOIL	LUMP SUM	2,802.00	LUMP SUM	2,802.00	100
13.	SEEDING & FERTILIZING	LUMP SUM	300.00	LUMP SUM	300.00	100
14.	MULCHING	LUMP SUM	900.00	LUMP SUM	900.00	100
15.	RECLAIM ACCESS ROADS	LUMP SUM	900.00	LUMP SUM	900.00	100
Sub-Total Schedule III					\$ 22,447 00	



SCHEDULE IV - COTTONWOOD ITEMIZATION OF QUANTITIES AND COSTS						
ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
1.	MOBILIZATION	LUMP SUM	14,821.00	LUMP SUM	13,821.00	100
2.	EXCAVATION & DISPOSAL	LUMP SUM	12,800.00	LUMP SUM	12,800.00	100
3.	CONSTRUCT ACCESS ROADS	LUMP SUM	500.00	LUMP SUM	500.00	100
4.	INSTALL 48" CSP CULVERT	LUMP SUM	1,080.00	LUMP SUM	1,080.00	100
5.	PORTAL REHABILITATION	LUMP SUM	6,000.00	LUMP SUM	6,000.00	100
6.	MINE REHABILITATION	1400 L.F.	14.30	1461 L.F.	20,892.30	100
7.	UNDERGROUND PNEUMATIC STOWING	3402 TON	19.60	1999.7 TON	39,194.12	100
8.	CONSTRUCT "D" LINE DITCH	LUMP SUM	6,675.00	LUMP SUM	6,675.00	100
9.	TYPE 3 BANK PROTECTION	386 C.Y.	13.00	386 C.Y.	5,018.00	100
10.	DRAIN AGGREGATE	47 C.Y.	13.50	132 C.Y.	1,782.00	100
11.	6" PVC DRAIN PIPE	50 L.F.	10.00	50 L.F.	500.00	100
12.	6" PERFORATED PVC PIPE	50 L.F.	10.00	60 L.F.	600.00	100
13.	CONSTRUCT FARM FENCE	110 ROD	10.00	114.3 ROD	1,143.00	100
14.	FENCE - SINGLE PANELS	6 EACH	75.00	6 EACH	450.00	100
15.	FENCE - DOUBLE PANELS	4 EACH	90.00	4 EACH	360.00	100
16.	FARM GATES	16 L.F.	5.00	16 L.F.	80.00	100
17.	DEBRIS CLEANUP	LUMP SUM	300.00	LUMP SUM	300.00	100
18.	LIME PLACEMENT	LUMP SUM	3,000.00	LUMP SUM	3,000.00	100
19.	TOPSOIL	LUMP SUM	12,600.00	LUMP SUM	12,600.00	100
20.	RECLAIM ACCESS ROADS	LUMP SUM	800.00	LUMP SUM	800.00	100
21.	SEEDING & FERTILIZING	LUMP SUM	1,185.00	LUMP SUM	1,185.00	100
22.	MULCHING	LUMP SUM	2,700.00	LUMP SUM	2,700.00	100
Sub-Total Schedule IV					\$ 131,480.42	





## ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
	Sub-Total - SCHEDULE I			117,631.20		
	Sub-Total - SCHEDULE II			21,377.00		
	Sub-Total - SCHEDULE III			22,447.00		
	Sub-Total - SCHEDULE IV			131,480.42		
	TOTAL			\$292,935.62		
	<u>EQUIPMENT USE (as per Contract Documents)</u>					
	SALVAGE MINE EQUIPMENT - CHARTIER WESTRIDGE					
	Cat 966 C Loader	1 HOUR	83.00	1 HOUR	83.00	
	1977 Ford Tanden Dump Truck	1 HOUR	50.00	1 HOUR	50.00	
	Total Equipment Use				\$ 133.00	
	<u>CHANGE ORDERS</u>					
	CHANGE ORDER NO. 4				1,235.50	
	CHANGE ORDER NO. 5 (LUMP SUM)				406.00	
	CHANGE ORDER NO. 6 (LUMP SUM)				475.00	





## SECTION II

2.12 CHANGE ORDER

Order No. 7Date: May 28, 1986Agreement Date: July 19, 1985NAME OF PROJECT: TRACY-CENTERVILLE MINE RECLAMATIONCascade County, Montana IFB 4957-GOWNER: Montana Department of State LandsCONTRACTOR: Shumaker Trucking and Excavating Contractors, Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment and miscellaneous. Show percent where applicable.)

DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
	MAT'LS	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
Reconciliation of Final Quant- ities. (See attached sheet)						-31,451.58
Adjustment of Contract time.						
TOTAL COST - MAT'LS, LABOR, EQUIPMENT & MISC.						
OVERHEAD & PROFIT @ _____ %						
GRAND TOTAL - THIS CHANGE ORDER						
						-31,451.58

Original Contract Price	<u>\$324,112.70</u>
Current Contract Price Adjusted by Previous Change Order	<u>326,503.70</u>
Cost This Change Order (+ or -)	<u>-31,451.58</u>
New Contract Price Including This Change Order	<u>\$295,052.12</u>

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decreased) by 10 calendar days.

The date for completion of all work will be July 16, 1986.

Description and Justification for Change:

1. The actual quantities shown were necessary to meet field conditions encountered during construction.

The contract time is extended to give the Contractor credit for 8 inclement weather days and 2 days used per Change Order No. 4.

SURETY CONSENT

The surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby ~~increased by~~ DECREASED BY THIRTY ONE THOUSAND FOUR HUNDRED FIFTY ONE AND 58/100

(\$31,451.58-----) (One hundred percent (100%) of the Change Order amount) and the penalty of the applicable Payment Bond or Bonds is hereby ~~increased by~~ DECREASED BY THIRTY ONE THOUSAND FOUR HUNDRED FIFTY ONE AND 58/100--- (\$ 31,451.58-----) (One hundred percent (100%) of the Change Order amount).

COUNTERSIGNED BY MONTANA RESIDENT AGENT

COGSWELL AGENCY

BY: [Signature]

RESIDENT AGENT

SURETY

FIREMAN'S FUND INSURANCE COMPANY

BY: [Signature]

E. B. COGSWELL, JR. (Seal)

Recommended by: L. C. Hanson Company [Signature], Engineer  
Accepted by: [Signature], Contractor  
Approved by: [Signature], Owner

RECONCILIATION OF QUANTITIES

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	ACTUAL QUANTITY	CHANGE IN PRICE
<u>SCHEDULE I - SPRING COULEE</u>				
3.	SURFACE PNEUMATIC STOWING	1158 TON	1179.8 TON	+ \$ 479.60
4.	SOIL CEMENT	171 TON	108.7 TON	- 3,115.00
5.	RIPRAP ADIT SEAL	382 C.Y.	201 C.Y.	- 2,172.00
7.	TYPE 4 BANK PROTECTION	52 C.Y.	76 C.Y.	+ 480.00
8.	LIMESTONE CHANNEL LINING	102 TON	84 TON	- 612.00
9.	GRAVEL SURFACING	111 C.Y.	127 C.Y.	+ 144.00
12.	PNEUMATIC TOPSOIL	145 TON	116 TON	- 754.00
13.	CONSTRUCT FARM FENCE	215 ROD	224.8 ROD	+ 117.60
14.	FENCE - SINGLE PANELS	18 EACH	17 EACH	- 75.00
15.	FENCE - DOUBLE PANELS	4 EACH	8 EACH	+ 400.00
17.	FARM GATES	108 L.F.	107 L.F.	- 5.00
24.	REMOVE AND RESET FENCE	16 ROD	16.5 ROD	+ 5.00
25.	6" PERFORATED PVC PIPE	70 L.F.	81 L.F.	+ 110.00
SUB-TOTAL SCHEDULE I				- \$4,996.80

RECONCILIATION OF QUANTITIES

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	ACTUAL QUANTITY	CHANGE IN PRICE
<u>SCHEDULE II - TESINSKY SITE</u>				
3.	CONSTRUCT FARM FENCE	64 ROD	60.8 ROD	- \$ 32.00
10.	SURFACE PNEUMATIC STOWING	58 TON	58.8 TON	+ <u>24.00</u>
	SUBTOTAL SCHEDULE II			- \$ 8.00
<u>SCHEDULE III - CHARTIER WESTRIDGE</u>				
3.	SURFACE PNEUMATIC STOWING	42 TON	44.7 TON	+ 81.00
7.	CONSTRUCT FARM FENCE	111 ROD	108.9 ROD	- 21.00
9.	FENCE - DOUBLE PANELS	5 EACH	6 EACH	+ <u>90.00</u>
	SUBTOTAL SCHEDULE III			+ \$ 150.00
<u>SCHEDULE IV - COTTONWOOD</u>				
6.	MINE REHABILITATION	1400 L.F.	1461 L.F.	+ 872.30
7.	UNDERGROUND PNEUMATIC STOWING	3402 TON	1999.7 TON	- 27,485.08
10.	DRAIN AGGREGATE	47 C.Y.	132 C.Y.	+ 1,147.50
12.	6" PERFORATED PVC PIPE	50 L.F.	60 L.F.	+ 100.00
13.	CONSTRUCT FARM FENCE	110 ROD	114.3 ROD	+ <u>43.00</u>
	SUBTOTAL SCHEDULE IV			- \$25,322.28
	SUBTOTAL - SCHEDULE I			- \$ 4,996.80
	SUBTOTAL - SCHEDULE II			- 8.00
	SUBTOTAL - SCHEDULE III			+ 150.00
	SUBTOTAL - SCHEDULE IV			- 25,322.28
	Sub-Total			- \$30,177.08
<u>CHANGE ORDER NO. 4</u>				
	EST. COST - \$2510.00	ACTUAL COST \$1235.50		- 1,274.50
	TOTAL			- \$31,451.58

## APPENDIX B





-SLIDE LOG-

TRACY-CENTERVILLE SITE

Each site is listed separately and abbreviated as follows:

CHARTIER WESTRIDGE	CH
COTTONWOOD SITE	CO
SPRING COULEE	S
TESINSKY	T



- PHOTO SLIDE LOG -

TRACY-CENTERVILLE SITE

1.	7-1-85	Demonstration of pneumatic stowing equipment.
2.	7-1-85	" " " " "
3.	7-1-85	" " " " "
4.	7-1-85	" " " " "
5.	7-1-85	" " " " "
6.	7-1-85	" " " " "
7.	7-1-85	" " " " "



- PHOTO SLIDE LOG -  
CHARTIER WESTRIDGE SITE

1CH	8-27-85	Access road to site looking southwest.
2CH	8-27-85	Looking west from point on dam.
3CH	8-27-85	Looking southwest at lower tipple.
4CH	8-27-85	Looking west at adit.
5CH	8-27-85	Looking southwest at adit.
6CH	8-27-85	Looking east from top of adit.
7CH	8-27-85	Looking east from top of adit at upper tipple.
8CH	8-27-85	Looking west from tipple into adit.
9CH	8-27-85	Looking east down coulee.
10CH	8-27-85	Looking east down coulee.
11CH	8-27-85	Looking northwest at tipple and adit.
12CH	8-27-85	Looking east down coulee.
13CH	8-27-85	Looking north up coulee toward adit.
14CH	8-27-85	Looking west over Spoil No. 2.
15CH	8-27-85	Looking west at lower tipple.
16CH	8-27-85	Looking west from County Road.
17CH	4-18-86	Adit No. 1 after stowing.
18CH	4-18-86	Adit No. 1 area, tipple removed.
19CH	7-8-86	Lower part of Spoil No. 2 & tipple area after topsoil.
20CH	7-8-86	Spoil No. 1 and tipple area after topsoil and bank protection.
21CH	7-8-86	Lower portion Spoil No. 1 after topsoil and bank protection.
22CH	7-8-86	Adit after topsoil.
23CH	7-8-86	Creek bottom and slope of Spoil No. 2 after topsoil.
24CH	7-8-86	Access road area reclaimed.



- PHOTO SLIDE LOG -

COTTONWOOD SITE

1C0	8-20-85	Above Spoil #4 looking at Spoil #1 before construction.
2C0	8-20-85	Above Spoil #4 looking at Spoil #1 before construction.
3C0	8-20-85	Showing Spoil #4 and #1 before construction, looking north.
4C0	8-20-85	Spoil #4 before construction.
5C0	8-20-85	Spoil #1 before construction, looking north.
6C0	8-20-85	Adit #1 before construction.
7C0	8-20-85	Closeup Adit #1 before construction.
8C0	8-20-85	Inside Adit #1 before construction.
9C0	8-21-85	Spoil #1 before construction, looking south.
10C0	8-21-85	Adit #1 and Spoil #1.
11C0	8-21-85	Timbers for stabilizing entrance at Adit #1.
12C0	8-21-85	Spoil #1 and timbers for stabilizing entrance Adit #1.
13C0	8-21-85	Timbers and entrance Adit #1.
14C0	8-21-85	Spoil #1.
15C0	8-21-85	Spoil #2.
16C0	8-21-85	Lower portion of Spoil #2, Spoil #3 in center of photo.
17C0	8-21-85	Top portion of Spoil #2 and collector.
18C0	8-21-85	Top portion of Spoil #2.
19C0	8-21-85	Top portion of Spoil #2.
20C0	8-21-85	Lower portion of Spoil #1
21C0	8-21-85	Lower portion of Spoil #1.
22C0	8-21-85	Looking south on "D" ditch, ditch washed out at right.
23C0	8-21-85	New single panel by existing fence, spoil washed into field.
24C0	8-21-85	Spoil #1 at fence line.





25C0	8-21-85	Spoil #2 and location of "B" ditch.
26C0	8-23-85	Portal rehabilitation Adit #1.
27C0	8-23-85	Putting timbers in place for stabilizing Adit #1.
28C0	8-23-85	Putting timbers in place for stabilizing Adit #1.
29C0	3-13-86	Pad built for screening.
30C0	3-13-86	Conveyor & Trap.
31C0	3-13-86	Road from screen to stockpile.
32C0	3-13-86	Screened stockpile lt. & oversize area rt.
33C0	3-13-86	Road from stockpile to stower.
34C0	3-13-86	Upper part of road to stower.
35C0	3-13-86	Stower.
36C0	3-19-86	Looking N.W., top view of remaining Spoil pile at Spoil #1.
37C0	3-19-86	Looking south, remaining Spoil Pile #1.
38C0	3-19-86	Site from opposite hillside.
39C0	3-19-86	Looking N.E. at remaining Spoil Pile #1.
40C0	3-19-86	Looking S.E. at remaining Spoil Pile #1.
41C0	3-27-86	Stower.
42C0	3-27-86	Stower.
43C0	3-27-86	Stowing near entrance, discharge pipe.
44C0	3-27-86	Stowing near entrance, discharge pipe.
45C0	3-27-86	Stowing near entrance, discharge pipe.
46C0	3-27-86	Stowing near entrance, discharge pipe.
47C0	3-28-86	Portal area & stowing pipes.
48C0	5-13-86	Seepage collector trench.
49C0	5-13-86	Water inflow seepage collector trench.
50C0	5-13-86	Water running down ditch, Spoil #2.
51C0	5-13-86	Water out flow prior to pipe installation.
52C0	5-13-86	Water in seepage collector trench.



53C0	5-16-86	Seepage collector pipe 6" PVC outflow.
54C0	5-16-86	Backhow & Operator spreading lime ditch "D" slope Dozer finishing spoil ridge No. 2
55C0	5-16-86	Scraper spreading topsoil on limed area.



- PHOTO SLIDE LOG -

SPRING COULEE SITE

1S	7-84	Adit #3 before construction.
2S	7-84	Adit #4 before construction.
3S	7-84	Adit #12 before construction.
4S	7-84	Adit #11 before construction.
5S	7-84	Adit #9 and #10 before construction.
6S	7-84	Adit #9 before construction.
7S	7-84	Adit #7 before construction.
8S	7-84	Adit #7 before construction.
9S	7-84	Adit #7 before construction.
10S	7-84	Adit #7 before construction.
11S	7-84	Adit #7 before construction.
12S	7-84	Adit #5 and #6 before construction.
13S	8-19-85	Adit #12
14S	8-19-85	Looking west from Adit #5 at top of spoils.
15S	8-19-85	Setting up screening equipment.
16S	8-19-85	Setting up screening equipment.
17S	8-19-85	Looking south across Spring Coulee.
18S	8-19-85	Looking south up creek channel.
19S	8-19-85	Looking south up creek channel.
20S	8-19-85	Further up creek, looking south.
21S	8-19-85	Further up creek, looking south.
22S	8-19-85	Further up creek, looking south.
23S	8-19-85	Existing water tank road.
24S	8-19-85	Existing water tank road access.





25S	8-19-85	Water tank road and west end of site.
26S	8-19-85	West end of site, looking west.
27S	8-19-85	West end of site, looking southwest.
28S	8-19-85	Approximate area of cattle path.
29S	8-19-85	Moving east up coulee of 28S, looking south.
30S	8-19-85	Moving east up coulee of 29S, looking south.
31S	8-19-85	East of 30S up coulee, looking south.
32S	8-19-85	Looking down the coulee, at south bank.
33S	8-19-85	Access to site and Adkins property.
34S	8-19-85	Looking south at Adit #5.
35S	8-19-85	Looking south, just west of Adit #5, Slide 34S.
36S	8-19-85	Looking south, just west of Slide 35S.
37S	8-20-85	Dozing spoil between Adit #4 and #5.
38S	8-20-85	Dozing spoil between Adit #4 and #5 and screen set up.
39S	8-20-85	Screen set up.
40S	8-20-85	Dozing spoil above screen set up.
41S	8-20-85	Operation taken from Portal #4.
42S	8-20-85	Adit #12 taken from across coulee.
43S	8-20-85	Adit #11 taken from across coulee.
44S	8-20-85	Adit #9 and #10 taken from across coulee.
45S	8-20-85	Original condition of coulee before construction - taken from Adit #5.
46S	8-20-85	Dozer working in spoils at foot of Adit #12.
47S	8-22-85	Excavating for spring collector at Adit #3.
48S	8-22-85	Excavating for spring collector at Adit #3.
49S	8-22-85	Existing spring tank and working at Adit #3.
50S	8-22-85	Excavating for new stock tank.



51S	8-23-85	Water flowing in PVC pipe Adit #3.
52S	8-26-85	Trench for lowering waterline to Adkins.
53S	8-26-85	36" RCP culvert for Adkins access road.
54S	8-26-85	Trench for waterline to stock tank.
55S	8-26-85	Exc. trench for lowering waterline to stock tank.
56S	8-27-85	Looking north down creek from Adkins road.
57S	8-27-85	Further down creek than 56S.
58S	8-27-85	Still further down creek.
59S	8-28-85	Excavating for 36" RCP in Adkins road.
60S	8-28-85	Installing 36" RCP in Adkins road.
61S	9-04-85	Adit #12 before construction.
62S	9-04-85	Setting powder ( primer cord ) Adit #12.
63S	9-04-85	Adit #12 before blast.
64S	9-04-85	Adit #12 during blast.
65S	9-04-85	Adit #7 before construction from across coulee.
66S	9-04-85	Adit #7 before construction from across coulee.
67S	10-03-85	Looking east at area west of water tank road.
68S	10-03-85	Looking northeast at north edge of area west of water tank road.
69S	10-03-85	Showing 6" minus pit run gravel over 36" RCP.
70S	2-25-86	Adit No. 4 channel exc.
71S	2-25-86	Adit No. 4 channel exc. & box culvert.
72S	2-25-86	Adit No. 4 box culvert exc.
73S	2-25-86	Adit No. 4 box culvert.
74S	2-25-86	Adit No. 4 exc.
75S	2-26-86	Adit No. 4 with 6" PVC installed.
76S	2-26-96	Adit No. 4 6" PVC & bedding.
76A S	2-26-86	Adit No. 4 bedding material.



77S	3-11-86	Beginning of road to Adit #7.
78S	3-11-86	Cut into bank farther up road to Adit #7.
79S	3-11-86	Fill into creek farther up road to Adit #7.
80S	3-11-86	Cut & fill farther up road to Adit #7.
81S	3-11-86	Road farther up to Adit #7.
82S	3-11-86	Last part of road to Adit #7.
83S	4-3-86	Lime mixed cover soil.
84S	4-3-86	Same position as 77S After road to Adit #7 was reclaimed.
85S	4-3-86	Same position as 78S After road to Adit #7 was reclaimed.
86S	4-3-86	Same position as 79S After road to Adit #7 was reclaimed.
87S	4-3-86	Same position as 80S After road to Adit #7 was reclaimed.
88S	4-3-86	Same position as 81S After road to Adit #7 was reclaimed.
89S	4-3-86	Same position as 82S After road to Adit #7 was reclaimed.
90S	4-4-86	Creek channel from over outlet end of pipes.
91S	4-4-86	Creek channel looking at inlet of pipes.
92S	4-7-86	Creek channel looking toward drop inlet.
93S	4-7-86	Down creek channel from intersection.
94S	5-1-86	Adit No. 4 channel.
95S	5-1-86	Adit No. 4 channel.
96S	5-1-86	Placing topsoil along creek channel.
97S	5-1-86	Hand placing topsoil along creek channel.
98S	5-1-86	Placing topsoil on creek channel slopes.
99S	5-1-86	Topsoil around stock tank area.



100S	5-1-86	Topsoil over disposal area.
101S	5-19-86	Tractor & spiked tooth duckfoot for filling packed area.
102S	5-27-96	Tracking slopes.
103S	5-27-86	Shooting seed, mulch & tackifier.
104S	6-10-86	Cut outs for patching Tracy-Brown road.
105S	6-03-86	Cut outs for patching Tracy-Brown road.
106S	6-03-86	Filling cut outs with hot mix Tracy-Brown road.
107S	6-01-86	Rolling above patch.





- PHOTO SLIDE LOG -

TESINSKY SITE

1T	10-29-85	Spoil Area No. 1.
2T	10-29-85	Adit No. 2.
3T	10-29-85	Tipple @ Adit No. 2, debris and spoil.
4T	10-29-85	West side of Spoil No. 2.
5T	10-29-85	Contaminated spoil in front of Spoil No. 2.
6T	10-29-85	East side of Spoil No. 2.
7T	10-29-85	Spoil Area No. 3.
8T	2-26-86	Proposed haul route across Surmi property.
9T	2-26-86	Proposed haul route across Surmi property.
10T	2-26-86	Area south of across gate.
11T	2-26-86	Looking north from access gate.
12T	3-21-86	Un-improved street from Surmi's house to access gate.
13T	3-21-86	Un-improved street from Surmi's house to access gate.
14T	3-21-86	Un-improved street closer to access gate.
15T	3-21-86	Just before access gate.
16T	3-21-86	Access gate.
17T	3-21-86	Un-improved street by Surmi's yard.
18T	3-21-86	Un-improved street by Surmi's yard.
19T	4-3-86	Pneumatic stower off road to Spoil No. 2.
20T	4-4-86	Stower at Spoil Pile No. 2 left, Spoil No. 3 right.
21T	4-4-86	Stower at Spoil Pile No. 2, right, Spoil No. 1 left.
22T	4-4-86	Stower at Spoil Pile No. 2, Spoil No. 1 left and Spoil No. 3 right.
23T	4-4-86	Portal entrance Adit No. 2.
24T	4-4-86	Pneumatic Stower set up.
25T	4-10-86	Spoil area No. 2 after mixing in lime.



26T	4-10-86	Close-up same as 25T, partially topsoiled.
27T	4-11-86	Spoil area No. 1 before lime.
28T	4-11-86	Spoil area No. 3 before lime.
29T	4-11-86	Spoil area No. 1 after lime mixed.
30T	4-18-86	Spoil area No. 2 after topsoiling.
31T	4-18-86	Spoil area No. 2 after topsoiling.
32T	5-23-86	Shooting seed, mulch & tackifier spoil area No. 1.
33T	5-23-86	Shooting seed, mulch & tackifier spoil area No. 2.
34T	5-23-86	Filled in ditch behind Tesinsky house.
35T	5-23-86	After tracking spoil area No. 1.
36T	5-23-86	2nd application mulch spoil area No. 1.

NOTE: Good before/after comparisons are 20T/31T and 21T/30T



## APPENDIX C





ANALYSIS OF PROFESSIONAL SERVICE FEES  
DATE OF PREPARATION: November 20, 1986  
PROJECT: Tracy - Centerville Pneumatics

\*\*\*\*\*  
PROFESSIONAL SERVICE AMOUNT  
\*\*\*\*\*

\* Data Gathering, Site Evaluation, \$62,355.42  
Preliminary Engineering, Final  
Engineering, Bidding Documents

\* Construction Administration, \$41,907.76  
Construction Inspection,  
Final Report Preparation

L.C. HANSON CO. COSTS -----  
\$104,263.18  
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CONSTRUCTION COSTS -----  
\$295,185.12  
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PERCENTAGE ANALYSIS

PRE-CONST. LCH CO COST/CONSTRUCTION COST 21.12%  
CONST. & POST CONST. LCH CO. COST/CONSTRUCTION COST 14.20%  
TOTAL LCH CO. COST/CONSTRUCTION COST 35.32%

\*\*\*\*\*

REMARKS: Services provided include lien determination, landowner consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, contract administration, quantity accounting and full time resident inspection. Five separate sites were reclaimed under this contract. Numerous landowners and site conditions were encountered. Since this project involved underground work, numerous safety considerations were evaluated. This project was unique due to mine rehabilitation and underground stowing at one site.

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